



# CENTERS OF EXCELLENCE & RESEARCH EXCELLENCE

ANNUAL REPORT 2016

FUELING ECONOMIC GROWTH WITH RESEARCH & DEVELOPMENT PARTNERSHIPS



North Dakota's Centers of Excellence and Centers of Research Excellence programs partner our state's research universities with private sector companies to generate jobs and new business opportunities.

The Centers program was designed to harness the intellectual resources, high-tech equipment and training capabilities of our colleges and universities to solve "real world" problems in partnership with the private sector. Currently, 66 companies are actively partnering with the established Centers of Excellence and Centers of Research Excellence. These partnerships have leveraged \$221.8 million of matching funds for the state's investment of \$62.8 million.

Overall, the Centers program has had an economic impact of \$833.1 million since its creation in 2005. As of June 30, 2016, the Centers program has produced \$13.76 in economic impact for every \$1 of state funds invested according to a 2016 economic impact study.

The Centers program and its partners generate results, having created over 60 direct jobs this year with an estimated payroll of \$5.3 million. Salaries and benefits for these jobs averaged approximately \$88,333 per job.

North Dakota's investment in research is showing positive results and we should continue to pursue research in our state's targeted industries. The Centers of Excellence and Centers of Research Excellence are key factors in helping private sector businesses discover and develop new technologies that will continue to drive North Dakota's economic success.



Sincerely,

*Al Anderson*

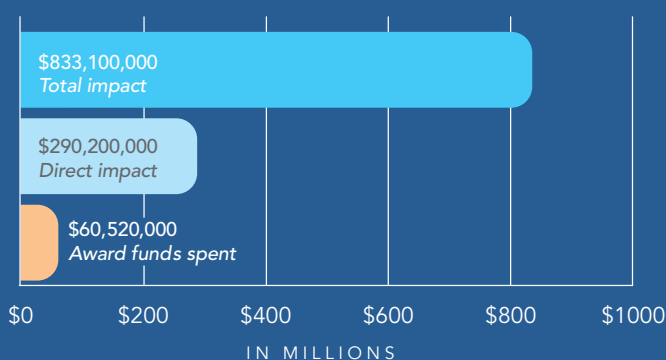
Al Anderson, Commissioner  
ND Department of Commerce



# PROGRAM SUMMARY

The Centers of Excellence & Research Excellence are hubs of research and development on the campuses of North Dakota's colleges and universities, partnering with private companies to commercialize new products and services. The Centers explore research in the fields of energy, agriculture, life sciences, aerospace, manufacturing and electronics.

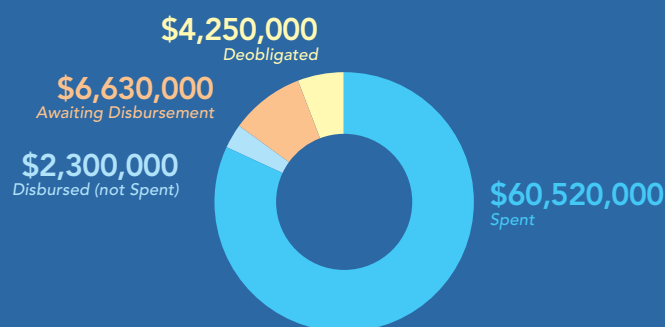
## ECONOMIC IMPACT



The Centers of Excellence program and its private sector partners have created or contributed to the creation of over 60 jobs with an estimated payroll of \$5.3 million.

## CENTERS OF EXCELLENCE INVESTMENT

\$73.7 million awarded through June 30, 2016



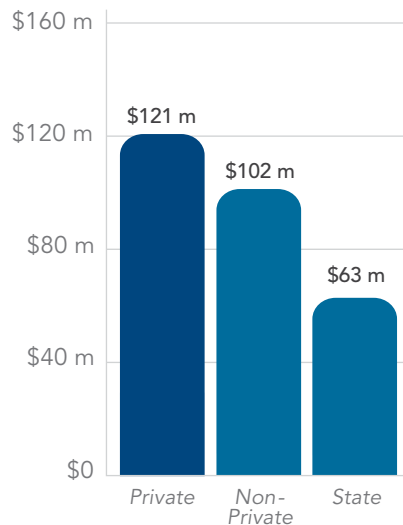
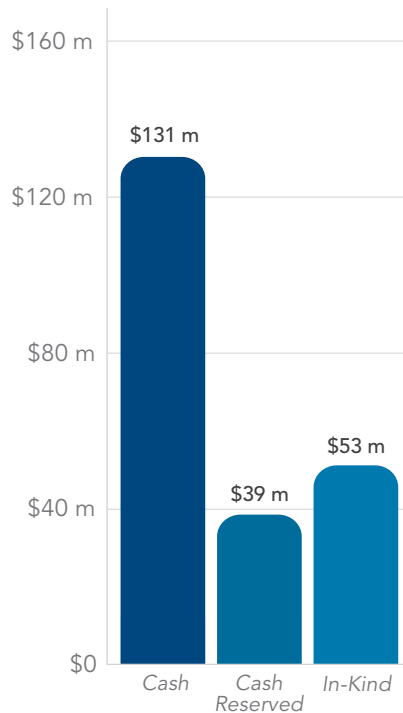
## ECONOMIC IMPACT

The Centers of Excellence program has had \$833.1 million in estimated total economic impact to North Dakota's economy. This includes a direct impact of \$290.2 million generated by the Centers, grant recipients and their partners.

## FUNDS INVESTED TO DATE

Since the first Centers of Excellence were approved by the State Legislature in 2003, a total of \$73.7 million in state funds have been awarded in 28 Centers of Excellence & Research Excellence and an additional 17 research, infrastructure and economic development projects. Of these funds, \$60.5 million has been spent, \$4.25 million has been unobligated, and \$8.9 million remains to be spent by the Centers and grant recipients as of June 30, 2016.

## MATCHING & LEVERAGED FUNDS RECEIVED



## MATCHING FUNDS

As of June 30, 2016 the Centers and grant recipients have obtained over \$223.3 million of matching and leveraged funds. When comparing matching and leveraged funds received across all programs to award funds spent, a ratio of 3.69:1 is realized.

Centers of Excellence and Centers of Research Excellence require a \$2 of matching funds for every \$1 invested by the state. These two programs have realized a ratio of 3.38:1. Base realignment, enhancement and limited deployment cooperative airspace project funds do not require matching or leveraged funds but have realized a ratio of 1.84:1.

## GRADUATING CENTER

The Center for Advanced Electronics Design & Manufacturing (CAEDM) has graduated from the Centers of Excellence program, reaching the end of its monitoring period and sustaining operations without state funding. This Center will no longer be required to obtain matching and leveraged funds in relation to any grants, nor report to the Centers of Excellence Commission on their impacts related to economic and job growth.

CAEDM was launched in February 2006. It performs research and development for private sector partners and collaborators, specializing in areas including wireless sensors, electronic systems, miniaturized electronics, and prototype development. The Center's efforts help partners and collaborators meet product and technology needs while enabling and promoting commercialization opportunities of new products and technologies. The Center has been an important partner in the launch and expansion of North Dakota companies. These include Appareo Systems, Pedigree Technologies and Intelligent InSites.

## BASE REALIGNMENT GRANT

The Grand Forks Air Force Base Realignment Business Transition Enhancement Grant was launched in June 2011. In conjunction with the Air Force Base mission change, the project goal was to facilitate strategic planning for small businesses and assist displaced military and civilian employees in starting their own businesses. Thirteen jobs were created and 151 were retained through the efforts of this project. Assistance was provided to entrepreneurs in starting their own small businesses. The project served 143 distinct clients for one-on-one consultation. 111 clients attended training in the area of entrepreneurship at 14 training events.



# COMMISSION MEMBERS

The Centers of Excellence Commission oversees the administration of Centers of Excellence, Centers of Excellence Enhancement Grants, Centers of Research Excellence, Research ND, Base Realignment Grants, and Limited Deployment Cooperative Airspace Projects (LDCAP).

The Centers of Excellence Commission, with assistance from the North Dakota Department of Commerce, oversees the post-award monitoring of all Centers and grant recipients. The process includes quarterly updates, site visits, third-party audits and an in-depth annual review of each award. All grant recipients are required to complete at least six years of post-award monitoring. One objective of the post-award monitoring activities is to measure the progress of an award against the results proposed in its respective application for funding. Another objective of the post-award monitoring activities is to ensure grant recipients are spending award funds in compliance within the scope of their project and in accordance with program requirements. Centers and grant recipients that demonstrate progress and compliance with program requirements are funded in stages according to their respective Centers of Excellence Commission-approved budget.



## NORTH DAKOTA ECONOMIC DEVELOPMENT FOUNDATION MEMBERS

- A. Mark Nisbet, Chairman  
North Dakota Principal Manager, Xcel Energy, Fargo
- B. Tim Hennessy, Vice Chairman  
Regional President, US Bank, Bismarck
- C. Jim Traynor  
Regional Sales Manager, NetSuite, Fargo



## STATE BOARD OF HIGHER EDUCATION MEMBERS

- D. Greg Stemen  
Branch Manager, First Community Credit Union, Oakes and Valley City
- E. Mike Ness  
Retired School Administrator of Hazen Public Schools, Bismarck
- F. Kevin Melicher  
O.D. Optometrist, Eyecare Associates, PC, Fargo

For details on previously approved Centers of Excellence and Centers of Excellence Enhancement Grants, visit [www.NDCentersOfExcellence.com](http://www.NDCentersOfExcellence.com).



# PROGRAM PARTNERS

3M  
 Access Energy  
 AeroVironment  
 Agnitron Technology  
 Agri ImaGIS  
**Agvise Laboratories**  
**Amity Technology**  
**Appareo**  
 Arkema  
**Avianax**  
**Bobcat**  
**c2renew**  
**c2sensor**  
 Calnetix  
 Cogi  
 Composites Innovation Center  
 Conscious Corn  
**Coretec Industries**  
**Cutbank Creek Produce**  
**Dakota Munitions**  
 DMZ Aerial  
**Eilnor Specialty Coatings**  
**Envergex**  
**FarmersEdge**  
**FARRMS**  
 Frosttime  
 General Atomics  
**GoldStryke**  
**Grand Sky Development**  
**Hear and Soil Farm**  
**High Plains Equipment**  
**Hilltop Farm**  
**Intelligent InSites**

**Kay's Country Market**  
 L3 Communications  
**Leading Edge Equipment**  
**Leavitt Gardens**  
**Meadowlark Granary**  
 Monsanto  
**Myriad Devices**  
**NoDak Coolers**  
**Nordsven Farms**  
**North Star Farm**  
**Northrop Grumman**  
**Pedigree Technologies**  
 Phone Halo  
 PPG Industries  
**Rainbow Farms**  
**Richland IFC**  
**Riverbound Farm**  
**Sanada Innovations**  
 Sensurion Aerospace  
**Sharper Shape**  
**SkySkopes**  
**South Prairie Produce**  
**Starkey Hearing Technologies**  
**StatOil**  
**Tina's Greenhouse**  
**Two Farm Girls**  
**UAI International**  
 Uniqarta  
 Weave Got Maille  
**Wholesale Supply Company**  
**Zuther Xtreme Technologies**  
 ZymeFast

*The companies in bold lettering have a presence in North Dakota.*

Centers of Excellence Awards	University, College or Related Foundation	Launch Date	Awards (in Millions)	Match & Leveraged Funds Received (in Millions)
Beef Systems Center of Excellence	NDSU	Oct-07	\$800,000	\$2,000,000
Center for Advanced Electronics Design and Manufacturing	NDSU	Feb-06	\$3,000,000	\$15,075,418
Center for Advanced Technology Development and Commercialization	NDSU	Nov-12	\$3,900,000	\$416,965
Center for Agbiotechnology: Oilseed Development	NDSU	Aug-09	\$3,500,000	\$12,000,000
Center for Biopharmaceutical Research and Production	NDSU	May-12	\$5,015,000	\$6,262,266
Center for Innovation	UND	Jan-05	\$800,000	\$3,565,000
Center for Integrated Electronic Systems	NDSU	Jun-09	\$2,050,000	\$4,237,867
Center for Sensors, Communications and Control	NDSU	Jan-11	\$2,800,000	\$5,549,769
Center for Surface Protection	NDSU	May-06	\$4,000,000	\$9,958,155
Center of Excellence in Life Sciences and Advanced Technologies	UND	Mar-07	\$3,500,000	\$4,929,770
COE for Passive Therapeutics	UND	Jun-09	\$2,650,000	\$6,554,467
COE in Space Technology and Operations	UND	Jun-09	\$1,000,000	\$235,200
Dakota Center for Technology Optimized Agriculture	LRSC	Jun-10	\$850,000	\$3,138,723
Enterprise University*	VCSU	May-06	\$1,000,000	\$5,140,039
Entrepreneurial Center for Horticulture	DCB	Jun-11	\$400,000	\$1,334,292
Institute for Technology and Business	DSU Strom Center	Oct-06	\$1,150,000	\$5,289,792
National Center for Hydrogen Technology	UND	Feb-06	\$2,500,000	\$58,606,463
National Energy Center of Excellence	BSC	Feb-06	\$3,000,000	\$7,292,000
NDSU Research Technology Incubator	NDSU	Mar-07	\$1,250,000	\$5,307,600
Petroleum Research, Education, & Entrepreneurship Center	UND	Jun-09	\$3,000,000	\$8,267,233
Petroleum Safety and Technology Center	WSC	May-06	\$400,000	\$1,183,044
SUNRISE BioProducts	UND	Jun-09	\$2,950,000	\$5,715,563
Unmanned Aircraft Systems Center of Excellence	UND	Mar-08	\$2,500,000	\$17,187,052
Enhancement Grants				
Certificate Programs for Full Motion Video and Activity Based Intelligence Analysis	UND	Jun-11	\$746,000	\$0
GFAFB Realignment Business Transition Enhancement Grant	UND	Jun-11	\$200,000	\$473,884
Law Enforcement Small UAS Training	UND	May-12	\$230,000	\$74,970
Materials and Nanotechnology Center Enhancement Grant	NDSU	Sep-11	\$1,000,000	\$476,264
North Dakota UAS Airspace Initiative Enhancement Grant	UND	Mar-11	\$100,000	\$6,516
Research 1 Expansion Enhancement Grant	NDSU	Jan-11	\$4,000,000	\$5,311,054
UAS Research, Education & Training Enhancement Grant	UND	Jun-10	\$2,754,000	\$1,357,961
UAS Software and Curriculum Development Enhancement Grant	UND	Mar-11	\$600,000	\$192,803
V2 Aerospace	UND	Sep-11	\$370,000	\$43,820
Centers of Research Excellence				
Center for Avian Therapeutics for Infectious Diseases	UND	Jun-13	\$700,000	\$1,429,151
Center for Biobased Materials Science and Technology	NDSU	Jun-14	\$1,132,500	\$242,546
Center for Gas Utilization	UND	Jun-15	\$300,000	\$499,366
Center for Life Sciences Research and Applications	NDSU	Nov-12	\$1,350,000	\$0
Center for Technologically Innovative Processes and Products	NDSU	Aug-12	\$1,331,250	\$891,236
Base Realignment				
Airspace Integration Team - UAS National Test Site	UND	Nov-12	\$500,000	\$123,753
Enhanced Use Lease (EUL) for Grand Forks Air Force Base III	UND	Nov-12	\$921,050	\$127,295
Enhanced Use Lease Phase IV	UND	Jul-13	\$160,000	\$0
Global Hawk Sensor Operator Part Task Trainer	UND	Dec-11	\$878,204	\$12,235,737
Integrating UAS into the National Airspace, Phase II	UND	Dec-11	\$255,440	\$150,102
Joint Distributed Common Ground System	UND	Dec-11	\$125,706	\$46,191
Limited Deployment Cooperative Airspace Projects				
Automatic Dependent Surveillance-Broadcast Miniaturization Program	NDSU	Nov-11	\$1,300,000	\$5,531,365
Limited Deployment Cooperative Airspace Project	UND	Oct-11	\$2,700,000	\$4,869,631
Grand Totals			\$73,669,150	\$223,330,323

\*Enterprise University concluded its operations and returned \$200,545.51 of its original \$1 million Centers of Excellence Award.

The Centers of Excellence program is a key component of North Dakota's technology-based economic development strategy. It has generated significant economic benefits by leveraging the research and intellectual capabilities of the state's universities and colleges with the resources of private sector companies.

Total economic impact:

**\$833.1 million**

**\$3.55 raised**  
for every **\$1 of**  
**awarded** funds spent

**24** businesses  
created or  
expanded

**66** private sector  
partners